



# The Road to Oral Health Equity in North Carolina

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Welcome to North Carolina’s initial Oral Health Equity publication, a partnership between the North Carolina Department of Health and Human Services’ Division of Public Health and the Office of Minority Health and Health Disparities. We solicited articles from prominent North Carolina dental and dental public health practitioners, academicians, policy makers, and community leaders. Our goal of this publication is to highlight the activities and research of our state experts, all working to overcome oral health disparities in North Carolina.

This newsletter comes at a time that the Oral Health Section (OHS) is celebrating its 100th Anniversary. In 1918, the North Carolina Dental Society was urged to act on behalf of the acute dental needs of schoolchildren. With the Board of Health’s support, the state dental society endorsed a school program and petitioned the General Assembly, who agreed to fund a public health dental program. It was a collaboration between many sectors that established what is now known as the Oral Health Section, the nation’s first state-funded dental public health program.

From our inception to now, our collaborations have developed policies and programs to address access to care. Our most noteworthy partnership is the “Into the Mouths of Babes” or NC Medicaid Physician Fluoride Varnish Program. North Carolina was one of the first states to successfully support preventive early childhood oral health services through primary care.

Based on the success of our early childhood collaborative model, this fall North Carolina will launch a framework that providers can use to address the oral health of pregnant patients and their children. This model may prove to be an important step in getting oral health into primary care and expanding access to dental care for pregnant women.

We have expanded our oral epidemiology program to include surveillance in pregnant women, the elderly, and are moving toward screening preschoolers and students with special healthcare needs. These additional data show us where in North Carolina, and in what population group, to focus the state’s efforts to achieve oral health equity.

In 2015, our public health dental hygienists assessed residents of assisted living facilities specifically to address oral health in the elderly. Almost a third of our assessments were not on elderly residents, but rather, on adults with disabilities. We now have a program that addresses oral health and prevention for elderly and disabled alike by partnering with facility staff on improved access to dental services for their residents.

In the last several years we’ve broadened our reach to become fully statewide, offer programs across the lifespan and engage our communities for local impact as never before. Looking at the Oral Health Section’s achievements over the past 100 years, from our inception to today, we see that by working together we can increase access, improve outcomes and work toward health equity for our vulnerable populations. As the OHS enters the next 100 years of service, may this newsletter, the first major collection of our state’s scholarship on oral health equity, shape our vision for the future.



# An Overview of Oral Health Equity in North Carolina

Cornell P. Wright, MPA • Executive Director, Office of Minority Health and Health Disparities, NC Department of Health and Human Services

Dental health and hygiene are important factors in one's overall health. Poor oral health can lead to illness, disease and injury. As defined by the North Carolina Office of Minority Health and Health Disparities, oral health equity speaks to the opportunity for everyone to experience optimal dental health, including care, services and resources. Public health has been focusing on improving oral health equity for all by reducing disparities and expanding access to effective preventive services through education, innovation and engagement. Efforts include community water fluoridation, school dental sealant programs and integrating oral health programs into chronic disease prevention efforts and medical care.

In North Carolina, there has been a century's worth of work dedicated to advancing dental public health and we celebrate this amazing accomplishment. We also continue to strive to eliminate the disparities in oral health in our communities. Whether we are looking at the high rates of child tooth decay among minority youth or low dental clinic utilization rates of adult minority populations, there is still much work to do in our state.

Historically, the North Carolina Department of Health and Human Services (DHHS) has worked across the state in our communities to share crucial resources and provide programs and services needed to address

health disparities and empower the most vulnerable among us. DHHS recently released the 2018 NC Health Equity Report, which highlights racial and ethnic health disparities, areas of progress and areas for continued improvement as we strive to build a healthier North Carolina.

Now, more than ever, we are working together to enhance partnerships across the state and inform communities about the most pressing health concerns affecting our friends, neighbors, loved ones and future generations. The reduction of oral health disparities will go a long way in creating healthier communities and produce brighter smiles across our state.

## People Living with Intellectual and Developmental Disabilities Deserve Quality Dental Care

Karen Luken, MS • Disability and Health Consultant

People with intellectual and developmental disabilities (I/DD) experience poorer health than the general population and often have inadequate access to quality health and dental care. Research studies have demonstrated that people with I/DD have high rates of poor oral hygiene, due to a wide variety of factors<sup>1</sup>.

People with I/DD often face challenges finding dental professionals in their community that are adequately trained to provide them with basic and emergency dental care. In 2017, the National Council on Disability reported that 75 percent of dental students had little to no preparation in providing care to people with I/DD<sup>2</sup>. This lack of professional education and experience results in misperceptions about patient needs and capabilities and limits access to care. A large percentage of people with I/DD rely on Medicaid health insurance coverage. However, many dentists do not accept Medicaid due to the low reimbursement rates.

Some children and adults with I/DD have limited manual dexterity that impacts their

ability to perform daily oral hygiene tasks, which can increase their risk of gum disease and tooth decay. Individuals may have difficulty describing their dental needs and pain. Untreated oral health problems can result in pain that is misdiagnosed and inappropriately treated. Co-existing medical conditions and medications can also impact their oral health status. Some people have sensitivities to touch, sounds, smells, or lights and need individualized supports and accommodations to tolerate dental procedures.

Families consistently cite access to dental care as one of their biggest health care challenges. Families describe making multiple phone calls to find a dental practice that will see their family member and accept their insurance. Appointments often require extensive travel, time and expense. Although most people with I/DD live at home or are supported by family, caregivers receive little education and guidance on how to ensure the person's oral health needs are addressed in a proactive manner.

There is not one model for the delivery of quality dental care to people with I/DD, but health equity demands that individuals with I/DD have access to competent, caring and accessible clinicians who can meet their oral health needs across the life span. To improve access to care, community capacity must be increased by developing the skills and comfort level of community dental practices and professionals to serve patients in their community. Systems' issues of reimbursement, insurance coverage and professional education must also be addressed. As an adult with a developmental disability so eloquently stated "It is difficult to live with independence and dignity in the community if you are not healthy." And, whole person care includes oral health.

*The NC Division of Public Health, Oral Health Section's Special Care Dentistry Program addresses oral health prevention for the disabled by partnering with institutional facility staff on improved access to dental services for their residents.*

# Using Data to Inform Oral Health Strategic Planning

Sharon P. Brown, PhD, MPH, MN • Public Health Epidemiologist, NCDHHS, Oral Health Section

Data collection and its dissemination have become more important as the work of the Division of Public Health's Oral Health Section has expanded to include additional vulnerable populations. This fall the section is launching *Regional Oral Health Snapshots*, a basic data visualization tool offering information on several important oral health metrics.

Communities are typically defined by a geographic area, and our *Regional Oral Health Snapshots* follow the regional breakdown of counties used by the North Carolina Association of Local Health Directors (NCALHD) as seen in the map below<sup>1</sup>. The state has ten regions averaging about ten counties each. As you can imagine, regions can be quite different from each other with residents of each coming from different backgrounds and having their own cultures and traditions influencing their health care strategic priorities.

Metrics of the regional snapshots include such measures as: *kindergarteners with dental needs, populations supported by community water fluoridation, children receiving dental services in their medical home, and tobacco use*. Measures were chosen so they could be used to compare region-to-region and combine to offer a state value, which could then be used to compare North Carolina against other states.

This same regional breakdown of counties also was used to define the North Carolina Department of Health and Human Services (NCDHHS) State Center for Health Statistics' map of social determinants of health indicators launched this past April. The map represents part of the department's efforts to invest in better health and well-being of the state's population by identifying local social needs. Economic, housing and transportation conditions are described in the map, as are social and neighborhood conditions. A cumulative index provides an overall measure of social determinants of health indicators.

For the past year or so, the NC Oral Health Section's front-line dental hygienists have been holding oral health stakeholder meetings called Regional Oral Health Alliances (ROHA). These meetings have brought together public health providers, from health directors and dental providers to school nurses and tobacco control specialists, who act in partnership as a regional team to improve oral health locally. For example, one ROHA this past year chose to address oral health in early childhood, another chose to address transportation, and yet another chose to address access to dental care.

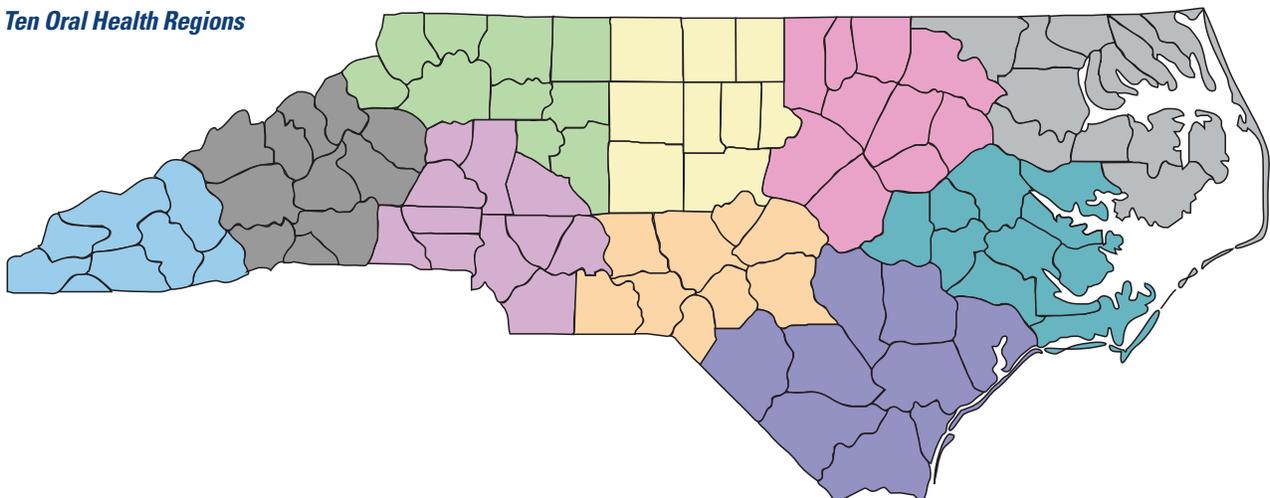
Together, the *Regional Oral Health Snapshots* and the map of social determinants offer an accurate yet speedy regional-level community

oral health needs assessment. All three overlaying domains of a community needs assessment are found in the combination of the tools:

1. a selected community, such as our regions
2. a focus, such as oral health, within that region
3. components to assess that impact oral health

Over the next year, ROHA members will be trained to use the *Regional Oral Health Snapshots* to identify their community's greatest local needs and prioritize areas for intervention. As a team, alliance members will identify measurable action items and create goals. The outcome will be the creation of a regional oral health improvement plan written and developed locally by those in the communities impacted by the plan. It is thought that public health interventions are more effective when targeted to specific populations and taking its culture into consideration<sup>2</sup>. Eventually, as partnerships strengthen and with the experience of time, ROHAs can begin to overlay their snapshots with the social determinants map and work to address broad factors that influence oral health.

**Ten Oral Health Regions**



# Oral Health Disparities Among NC's American Indian Population

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North Carolina has a rich racial and ethnic diversity. The state is home to more than 160,000 American Indians, representing about 1.6 percent of North Carolina's population<sup>1</sup>. North Carolina has the largest number of American Indians of any state east of the Mississippi River. This includes eight organized tribes: (Coharie, Eastern Band of Cherokee Nation, Haliwa-Saponi, Lumbee, Meherrin, Occaneechi Band of Saponi Nation, Sappony, Waccamaw Siouan), each with their own unique histories and cultural traditions.

Unfortunately, North Carolina's American Indian population suffers significant health disparities, primarily driven by limited access to health care and inequitable distribution of the social determinants of health. For example, American Indians in North Carolina are more than twice as likely to live in poverty, and less than half as likely to have a college education, compared to non-Hispanic whites. In 2016, 18.2 percent of North Carolina American Indian adults ages 18-64 reported not having health insurance, compared to 9.2 percent of non-Hispanic whites<sup>2</sup>.

There is limited information on the oral health status of American Indians in North Carolina. In 2016, about 43 percent of American Indian adults reported not visiting a dental clinic in the past year (compared to 32 percent of non-Hispanic whites) and 52.3 percent reported having had at least one permanent tooth removed, compared to 45.5 percent of non-Hispanic whites. Data from the Rural Nutrition and Oral Health Study conducted among older adults in rural, eastern North Carolina indicated that, compared to non-Hispanic whites, American Indian and African American older adults are much more likely to have poorer indicators of oral health deficits<sup>3</sup> and were more likely to practice home dental self-care practices<sup>4</sup>.

In addition to the limited access to health care and social determinants of health indicators, American Indians in North Carolina are at increased risk for poor oral health because of health factors that are more predominant in this population. For example, diabetes is a major risk factor for periodontal disease<sup>5</sup> and tooth loss<sup>6</sup>. American Indians in North Carolina are nearly twice as likely as non-Hispanic whites to be diagnosed with diabetes<sup>7</sup>. American Indians are also more likely to report being a current smoker compared to non-Hispanic whites (26.2 percent vs. 17.9 percent)<sup>2</sup>.

In North Carolina, there is wide geographic variability with respect to access to dental services, with dental practices largely being in areas of the state that are urban or suburban. Access to care is much more challenging in rural parts of the state where population density is low. This is a significant issue since American Indian populations tend to be more prominent in the state's rural counties. Of the 100 North Carolina counties, 16 have American Indian populations above the national average of 1.5 percent<sup>1</sup>. The Eastern Band of Cherokee Indians (EBCI) offers dental services to tribal members through their hospital: [cherokeehospital.org-Dental-Clinic](http://cherokeehospital.org-Dental-Clinic), and the ECU School of Dental Medicine has three Community Service Learning Centers (CSLCs) located in counties where the proportion of American Indians is above the national average (Hertford, Jackson, and Robeson). A review of patient data from the CSLC sites shows that about 5 percent of all patients seen in 2016 reported race as American Indian. All but one CSLC (Spruce Pine in Mitchell County) had patients who reported their race as American Indian and at the CSLC in Lumberton, Robeson County, about 40 percent of patients are American Indians.

Efforts to increase the number of American Indians who work in the dental profession are also a priority in the United States. Like other states, data on underrepresented minorities (URM) in North Carolina combines American Indians with African Americans and Hispanics to track progress in raising the number of dentists. ECU School of Dental Medicine has steadily increased the proportion of students that are categorized as URM from 14 percent for 2011-2013, to 26 percent for 2014-2016. The most recent incoming class (2017) is comprised of 37 percent URM.

Partnering with other institutions that have a high American Indian population to establish early admission programs is one way for NC dental schools to increase the number of American Indians enrolled. Such programs could be modeled after the one that Brody School of Medicine has with UNC-Pembroke: [uncp.edu/EarlyAssuranceProgrambrochure](http://uncp.edu/EarlyAssuranceProgrambrochure).

Research shows that the top barrier to being recruited in dental school for URM students is financial<sup>8</sup>. The UNC-Pembroke Early Assurance Program partnership with ECU provides two students with a four-year merit scholarship to cover expenses that include books and room and board at UNC-Pembroke. Applicants must meet strict academic standards and be residents of Robeson, Hoke, Scotland, Bladen, Columbus, or Sampson counties.

Same as for many health conditions, American Indians experience significant oral health disparities, due largely to lack of access to dental care services and health behaviors and conditions that increase risk of oral disease. Efforts are underway to address these issues, but further data and resources are needed to better understand how to close this disparity gap.

## Silver Diamine Fluoride: A New Solution for Managing Early Childhood Caries

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The prevalence of dental caries (tooth decay) in young children has been decreasing but remains an important health problem in North Carolina. The 2016-17 NC kindergarten survey revealed 38.7 percent had already experienced this disease and 14.3 percent had untreated decay<sup>1</sup>. Early childhood caries (ECC) is tooth decay that can occur as soon as the first teeth erupt, around age one. It can be painful for the child and can affect quality-of-life such as the ability to eat and sleep. Very young children cannot easily sit still in a dental chair for extensive treatment, making it difficult to treat. Severe ECC may need to be treated in an operating room with general anesthesia. This type of treatment is expensive, can be traumatic for the child and family, and is not always available.

Silver diamine fluoride (SDF) is an FDA approved, topically applied, low-cost agent used off-label for arresting dental caries. A drop of this clear or tinted blue liquid in the cavity of a decayed tooth can stop the decay process. No injections, anesthesia, drilling or surgery is required. The silver component has a strong antibacterial action and the fluoride strengthens the tooth. Together, the SDF components change the environment of the tooth, making it harder and more resistant to breaking down<sup>2</sup>. The SDF caries arrest rate was 81 percent for primary (baby) teeth in a systematic review conducted by Gao and colleagues<sup>3</sup>. The American Academy of Pediatric Dentistry workgroup panel developed the following recommendation for its use in children and adolescents including those with special health care needs: “The SDF panel supports the use of 28 percent SDF for the arrest of cavitated lesions in primary teeth as part of a comprehensive caries management program. (Conditional recommendation, low quality evidence.)”<sup>4</sup>

The primary disadvantage of this material is that the treated tooth surface turns black. (Figure 1) Depending on the location in the mouth, this color change can be an esthetic concern, especially for anterior teeth. Most parents surveyed are comfortable with the discoloration, when compared to invasive alternative treatment<sup>5,6</sup>. It should not be used for people with a known silver allergy or if the lesion is too close to the pulp of the tooth.

Funding was received from Blue Cross and Blue Shield of North Carolina Foundation to develop a protocol for use in safety net dental clinics (SNDC), pilot test it, and get feedback regarding the implementation process. In many communities, safety net dental clinics (SNDCs) provide dental care for children most at risk for dental caries.

Three NC SNDCs participated in the project: Stanly County Health Department, Albemarle; FirstHealth, Southern Pines; and Piedmont Health, Carrboro.

All three SNDCs used the SDF protocol and incorporated SDF into their practices. Dentists and staff suggested changes to the initial SDF protocol during focus groups conducted after SDF training and implementation. A relatively easy-to-follow expanded protocol was developed. Getting feedback from dentists and staff was an important part of the protocol improvement and enhanced their ownership of the SDF process. The hands-on observation session during patient care was deemed a very valuable part of the training.

Protocol improvements were identified to facilitate incorporation of SDF into SNDCs. Several were related to the informed consent process, and non-clinical components such as templates for electronic health records to aid SDF progress notes and billing procedures.

Placing laminated SDF information in each operatory was suggested to remind providers of this procedure option. Staff also recommended they receive “temporary SDF tattoos” as part of training to see that it does go away and allay fears about SDF staining the skin. Participants reported that the protocol was easy to use, low cost, and a great way to help their young patients and families who might otherwise have to be referred for dental care at distant locations and at greater cost.

**FIGURE 1. Picture of a primary tooth with carious lesion before and after SDF application.**

TOOTH BEFORE SILVER DIAMINE FLUORIDE



TOOTH AFTER SILVER DIAMINE FLUORIDE



# The Community Dental Health Coordinator in North Carolina: An Opportunity for Prevention

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Jessica Scott, DHS, RDH • Adult Oral Health Coordinator, Oral Health Section

Some of North Carolina's most vulnerable populations live in areas where access to care is minimal at best. To improve access to care, NC is investigating an alternative dental workforce model developed by the American Dental Association, the Community Dental Health Coordinator (CDHC). The CDHC is uniquely positioned to help address social determinants of health and improve oral health outcomes through community-based prevention, patient navigation and care coordination.

CDHCs are dental assistants or dental hygienists with the combined skills of a

community health worker, dental auxiliary, and care coordinator who are recruited from the vulnerable community they will serve<sup>1</sup>. Recruiting from the communities they will serve promotes trust and eliminates cultural and language barriers<sup>2</sup>. As a patient navigator, the CDHC will be able to provide support and guidance with dental insurances and direct individuals and families to appropriate oral health caregivers in their communities. The CDHC can also serve to coordinate care between medical and dental providers to ensure that whole-person care is established. Through education and

disease prevention, "the CDHC can empower people in underserved communities to manage their own oral health"<sup>2</sup>.

CDHCs are working in 26 states across the US<sup>3</sup>. Currently, Alamance Community College is offering the CDHC program in North Carolina. Adding CDHCs to the oral health team will increase the state's capacity to provide quality preventive services to vulnerable populations; improve oral health literacy and outcomes; and increase interprofessional collaboration and dental access in North Carolina.



# Perinatal Oral Health in North Carolina: Recognizing Disparities and Planning for Improvement

Barbara Smith, RDH, MS • Perinatal Oral Health Coordinator, NC Oral Health Section

Sarah Conte, DNP, MSN, RN • Maternal Nurse Consultant, NCDHHS, Women's Health Branch Section

Pregnancy is a vulnerable time in a woman's life during which there are many hormonal and physiological changes that can adversely affect oral health. Pregnancy may increase the incidence of oral diseases such as gum disease and dental decay. Dental diseases can be passed from the mother to the child placing the child at an increased risk for preterm low birth weight and early childhood decay.

To improve maternal and child oral health outcomes, medical and dental healthcare providers must understand the significance of recognizing, preventing and treating oral health problems during pregnancy and the importance of integrating oral health into primary care practice.

## NORTH CAROLINA DATA

In 2016, North Carolina completed the first oral health assessment of pregnant women. Results reported that 459 pregnant women receiving prenatal care in 68 county health departments completed a questionnaire and received an oral screening. Demographics of this sample included 39 percent Hispanic, 52 percent non-Hispanic white and 41 percent black. Results more specifically identified the following:

- Less than half, 46 percent, of the participants reported Good or Excellent oral health
- 17 percent stated they had a dental visit during the current pregnancy
- 39 percent were asked by a medical provider if they had a dental home
- Less than half, 40 percent, reported having dental insurance
- More than two-thirds of participants indicated barriers existed which influenced access to dental care
- The cost was the single most common barrier identified



- Based on oral screening, one third of the pregnant women had untreated tooth decay and 30% reported experiencing bleeding gums.

The Division of Public Health, Oral Health Section has convened a Perinatal Oral Health Task Force to address poor oral health among pregnant women and their children. This task force developed the *Oral Health During Pregnancy: North Carolina Collaborative Practice Framework* that provides guidance for medical and dental professionals to ensure women obtain optimal oral health care during pregnancy and to promote interprofessional collaboration during prenatal care. Additionally, strategies are currently being evaluated to determine the most effective way to educate pregnant women on the importance of oral health during pregnancy. One such strategy is the group prenatal care model, CenteringPregnancy®.

## CENTERING PREGNANCY®

CenteringPregnancy® is a group model of care that provides content focused on care of the pregnant mother, preparation for labor, birth and welcoming a new baby over ten sessions beginning around the

12-16 weeks of gestation. Pregnancy is a time when women are naturally drawn to taking better care of themselves and their babies regardless of their health status. Therefore, increased emphasis on education and support is appropriate. Intentional goal setting helps each woman to focus on health issues affecting her well-being. CenteringPregnancy® prenatal care may be provided by clinicians credentialed to provide care to women.

The North Carolina Perinatal Oral Health Task Force recognizes the potential to reach pregnant women receiving prenatal care at existing CenteringPregnancy® sites across the state. This model has incorporated the oral health component in two of its ten sessions. The patient is educated about the physiological changes that occur during pregnancy that increase the risk for developing dental diseases, the importance of good oral hygiene habits, the importance of fluoride, nutrition, and recommendations for seeing a dentist. Education on infant oral health stresses the importance of good infant oral care, brushing when the first tooth appears and planning for the child's first dental visit at one year of life.

# School-Based Health Programs: Meeting the Oral Health Needs of Children Where They Are

Rhonda Stephens, DDS, MPH • Dentist Supervisor, NCDHHS, Oral Health Section

Nearly 20 years since the Surgeon General spotlighted dental decay as one of the most common, yet preventable, chronic diseases among children<sup>1</sup>, 20-58 percent of US schoolchildren age 6-19 still experience decay in their permanent teeth<sup>2</sup>. Children of racial and ethnic groups and low-income families also continue to experience higher rates of untreated dental decay than non-Hispanic white children and children from higher income households<sup>2</sup>. A variety of barriers can prevent these children from accessing dental care in the traditional dental office setting. For this reason, school-based oral health programs have been an important strategy to reach high-risk children who may otherwise go without even basic preventive dental care.

North Carolina's oral health program was established with the needs of schoolchildren in mind and initially focused on providing dental education and treatment for students. The program gradually shifted to emphasize prevention using the two most effective strategies for preventing tooth decay: Fluoride and Dental Sealants<sup>3,4</sup>. Through strong partnerships with the Department of Public Instruction, school health nurses and other school personnel, the North Carolina Oral Health Section operates school-based Fluoride Mouth Rinse and Dental Sealant Programs for schools with a high proportion of students eligible for the Free & Reduced Meals Program.

## FLUORIDE MOUTH RINSE PROGRAM

First implemented in 1972 in Robeson County Schools, the North Carolina Fluoride Mouth Rinse (FMR) Program consists of supervised weekly rinsing with a .02 percent sodium fluoride solution for one minute. Schools with 60 percent or more of students eligible for the Free & Reduced Meals Program are eligible to participate at no cost to the schools or



families. Supervised regular use of fluoride mouth rinse has shown an average 23 percent reduction in decayed, missing and filled teeth among participating children, even if the children use fluoride toothpaste or live in fluoridated-water communities<sup>5</sup>. A statewide school dental survey in 2003-2004 showed that low-income children who participated in the FMR program had decay rates almost as low as higher income children – an indication of the program's ability to reduce oral health disparities. An average of 54,000 children in grades 1-6 participate in the program annually and it is currently being reviewed for possible expansion into additional schools in the future.

## DENTAL SEALANT PROGRAM

A dental sealant is a thin, clear plastic material applied to the biting surfaces of permanent back teeth (molars) that can prevent up to 80 percent of tooth decay<sup>4</sup>. The state oral health program began conducting school-based dental sealant projects (SBSP) in the mid-1990s. The program targets schools with 50 percent or more of students eligible for the Free & Reduced Meals Program and is also free to schools and families. Each project involves

a full set-up of portable dental equipment and supplies in a designated location in the school. Public health dental hygienists then place sealants on eligible children under the supervision of a public health dentist. The state conducts approximately 100 projects in different schools each year with the intent of reaching schools and counties that may not have access to mobile preventive services. These projects also present an opportunity to identify and link children with other unmet dental needs to care in their local community. During the 2017-2018 school year, nearly 4,000 students received 12,700 sealants through the state program. These projects are in addition to SBSPs offered by local health departments, community health centers and corporate entities.

When access to care is a challenge, taking services to where people are located is one ideal way to reduce barriers and improve health. School-based oral health programs that use evidence-based interventions can significantly improve children's oral health, close disparity gaps, and even contribute to improved academic performance at all grade levels<sup>1,6,7</sup>.

# Addressing Dental Caries Prevalence Disparities in Different Populations of Children with School-Based Fluoride Mouth-Rinse Programs

Michael G. Tencza, D.D.S., Ph.D. • Dentist Supervisor, NCDHHS, Oral Health Section

Dental caries or tooth decay is one of the most common, chronic diseases affecting children and adults worldwide. It is especially prevalent in lower socioeconomic status (SES) groups. Unchecked it causes the progressive destruction of tooth structure which in many cases is accompanied by severe pain and infection. This often results in serious consequences affecting overall health. Treatment to replace lost tooth structure, return function and eliminate infection is very costly and places financial strain on the health care safety net. Prevention of dental decay is far more cost effective than providing treatment once disease is present.

Community water fluoridation (CWF), the adjustment of fluoride to optimal levels in community water supplies, is recognized as one of the ten greatest public health achievements of the 20th century and has been very effective for preventing and lessening the impact of dental decay. It has been endorsed by every US Surgeon General since its inception in Grand Rapids, Michigan in 1945<sup>1</sup>. CWF is especially important for high-risk populations as it is accessible to all individuals and families served by public water systems that are fluoridated.

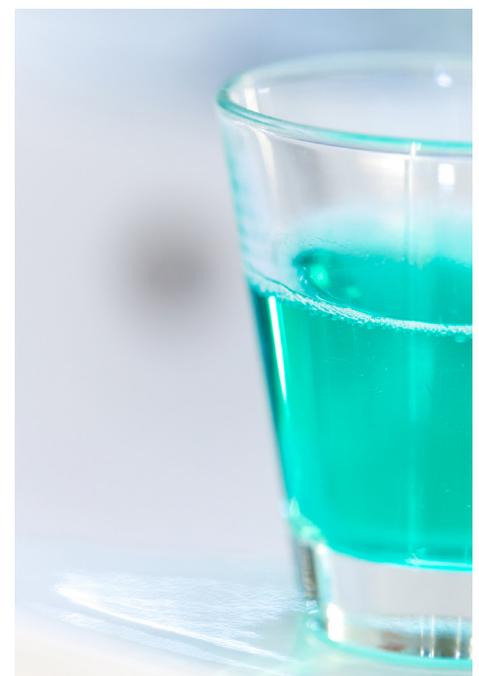
Many studies have shown the impact of CWF for reducing dental decay in permanent teeth. Early childhood caries, dental decay that affects the primary dentition in very young children, was recently shown to be reduced by 34.7 percent in North Carolina kindergarten children living in communities served by public water systems adjusting for optimal fluoride levels<sup>2</sup>. Though CWF reduces dental decay significantly, studies indicate that disparities in decay experience are still evident between different ethnic populations. Matsuo *et al.* found that dental decay experience was highest among

non-black Hispanic children, while dental decay rates were higher in black children than non-Hispanic white children<sup>3</sup>. In addition to ethnicity, other risk factors for dental decay include: 1) availability of dental care and 2) proportion of the population who are low SES, lack dental insurance, speak English as a second language, are homeless, have limited education, have special health care needs, and lack access to fluoridated water.

While low SES has been shown to be a risk factor for dental decay it has also been observed that disparities between black and white children are still observed in elementary schools with greater proportions of high SES students<sup>3</sup>.

Most children in the United States attend public schools. Targeting children in public schools provides an ideal opportunity to reach children regardless of ethnicity, SES, or other risk factors. School-based fluoride mouth rinse (FMR) is one program that has been used successfully for many years and is recognized by the American Society of State and Territorial Dental Directors (ASTDD) as a best practice approach for state and community oral health programs. According to the 2010 ASTDD State Synopsis, 35 states utilized FMR<sup>4</sup>. These programs are conducted by having elementary school children in first through fifth grades rinse once per week with a 0.2 percent sodium fluoride solution for one to two minutes subsequently spitting the rinse into individual cups. Unit dosing makes the process for administering straightforward and minimally disruptive of classroom time. FMR is not recommended for children less than six years of age as some young children might swallow the rinse instead of spitting it out. Early research found FMR programs resulted in very high reductions of dental decay of up to 65 percent<sup>5</sup>. Meta-analysis of more recent data shows dental decay is still reduced by 27 percent<sup>6</sup>. The decreasing impact of

FMR can be attributed to the widespread availability of fluoride via CWF, toothpastes, professional applications, food and drinks processed in fluoridated communities and other factors. However, even in communities with CWF the added benefits from participation in FMR programs by school children, especially those at high risk for developing dental decay, can be significant<sup>6,7</sup>. FMR programs are also cost effective. A 2010 ASTDD survey reported FMR programs cost between 54 cents and \$2.54 per child per year<sup>4</sup>. The total cost for participation per child from grades first through fifth therefore is far less than the treatment needed to restore one tooth after a cavity has occurred. Elementary school leadership and personnel who provide the support and commitment necessary to conduct school-based FMR programs are critical for enabling this important public health preventive intervention. School-based FMR programs benefit children by preventing dental decay and improving oral health. This is especially true for children at high-risk.



## Connecting Oral Health and HIV

**Jennifer Webster-Cyriaque, DDS, PhD • Professor, UNC School of Dentistry & UNC School of Medicine • Director, Viral Oral Infections and Immunosuppression and Cancer (VOICe)**

According to the Centers for Disease Control and Prevention, the United States had 1.2 million people living with HIV in 2013. Although nationally the HIV incidence declined slightly between 2010-2014, this varied by region with southern states accounting for half of the new and undiagnosed infections in 2014<sup>1</sup>. The State Center for Health Statistics reports 34,187 people diagnosed with HIV lived in North Carolina at the end of 2016. While public health promotes screening and prevention, the state saw 1,399 new diagnoses.

For decades, medical providers and researchers have collaborated to fight the disease. We now have a clearer understanding of this unique virus, from its transmission and replication to its prevention and treatment. Pharmacological advances have improved outcomes for those infected. Pharmacists fill prescriptions for both prevention and treatment medications that have improved health outcomes for HIV/AIDS patients. Viral infection has transitioned from being a death sentence to becoming a chronic health condition.

The dental profession, too, has worked diligently to improve outcomes for HIV positive individuals. Tooth decay and gum disease are the most prevalent dental diseases in the general population. The rate of gum disease in the HIV positive population is 75 percent<sup>2</sup>. Both oral diseases are almost entirely preventable and are seen at a higher rate in HIV positive individuals. In addition, dentists have found that oral lesions that are associated with immune suppression can be a hallmark of HIV disease.

Common oral issues (decayed teeth, gum infections and mouth lesions) affect nutrition and communication, resulting in social stigma<sup>3</sup>. HIV positive individuals self-report worse oral health than overall health

and list dental care as their chief unmet health need. Additionally, poor oral health impacts quality of life, yet it is compounded for those who have the HIV virus, because their dental disease can exacerbate medical conditions.

In the context of HIV positive individuals in North Carolina, racial and ethnic disparities exist not only in perceived oral health needs and in the severity of oral lesions of HIV/AIDS, but also dental utilization patterns<sup>4</sup>. As for health equity, non-Hispanic Black and Latino/Hispanic people living with HIV/AIDS, are less likely to receive dental services than other HIV positive individuals<sup>5</sup>. These population groups may be particularly vulnerable to oral infections and, therefore, missing out on the benefits of early dental intervention.

Improving oral health in these communities depends on several changes. Medical providers need to understand the impact of poor oral health on their patients and HIV positive individuals must value oral health's role in overall health and well-being. Medicine and dentistry must collaborate to improve the overall health of HIV positive individuals. The 2000 Report of the US Surgeon General on Oral Health suggested all healthcare providers address oral health. This unifying message has been underscored by the Institute of Medicine and by the Health Resources and Services Administration. In today's age of healthcare transformation providers are offering patient-centered, team-based care, yet dental providers are standing on the provider periphery. HIV/AIDS thought leaders and policy makers should acknowledge oral health's intimate relationship to overall health and outline a framework for medical-dental collaboration.

Best practices for medical teams treating HIV positive individuals exist. As a practice,

the HIV care continuum consists of diagnosis, linkage to care, retention in care, prescription of ART and HIV suppression. By including dentists as members of the caregiver team, providers can improve patient outcomes by improving oral health, overall health and well-being. Medical providers can insert oral health services, such as dental assessments, patient education and referrals to dental providers. Dental professionals can contribute to the continuum of care by screening and referrals to medical care, by providing clinical dental treatment to improve oral health, assist in nutrition, and address pain, and through patient engagement in treatment.

In no population is it more true that oral health is important to overall health than in that of the HIV/AIDS community. With the North Carolina leadership's current efforts in healthcare transformation, now is the time to bring dentists onto the caregiver team for HIV/AIDS patients. Soon, the Department of Health and Human Services, Division of Public Health, Oral Health Section will convene a task force to address oral health of HIV/AIDS individuals. Membership to the task force will include leaders and educators from both of the state's medical and dental schools, community providers, and policy influencers. Our goal will be to develop a collaborative practice framework ensuring such patients have access to better oral health. The need is great. The International Advisory Panel on HIV Care Continuum Optimization released guidelines in 2015 for improved care for adults and adolescents. Of the 36 recommendations offered, none addressed oral health or suggested a referral to a dental provider. Let's change that. Starting here. Starting now.

# Connecting Oral Health and HPV

Ricardo J. Padilla, DDS • Kaneda Family Distinguished Associate Professor, UNC School of Dentistry

Some types of Human papillomavirus (HPV) are responsible for the rise in HPV associated cancers in the United States<sup>1</sup>. HPV is a family of over 200 types of viruses that infect the basal cells of the stratified squamous epithelium of the skin and mucosae. Transmission of the virus from one person to another may occur via skin-skin, oral-genital, genital-genital, or finger-genital contact<sup>2,3</sup>.

HPV types are divided in high and low-risk groups based on their ability to induce benign or cancerous conditions. HPV types 16 and 18 are the most frequently encountered high-risk types. It is estimated that about 7 percent of the population is infected with any type of HPV, and between 1-2 percent are infected with HPV 16. Oral and oropharyngeal infections are more common in men (9 percent) than in women (5 percent), and the incidence of infection has increased in recent decades<sup>4</sup>.

There are high-risk behaviors and populations, which include people with multiple oral-genital partners, men who have sex with men, and immunosuppressed/immunocompromised individuals. Up to 80 percent of all HPV infections will clear within 18 months of the contact if there is no repeated contact and the person maintains a properly functional immune system<sup>5</sup>. For HPV 16, the clearance time may be as long as two to four years. In cases in which the HPV is not cleared by the patient's immune system, cells with low-risk HPV will develop into a benign lesion and cells infected with high-risk HPV will develop into a pre-malignant or malignant lesion. Lesions can take years, or even decades to develop.

In the oral and oropharyngeal region, the area most often affected is the soft palate, tonsils, posterior pharyngeal wall, base of the tongue and all the structures that encompass the Waldeyer's ring and oropharyngeal structures. Since most HPV-driven lesions begin as microscopic changes that are often asymptomatic, the healthcare providers must pay particular attention to examining the oropharynx, Waldeyer's ring and base of the tongue for lesions, areas of red patches or ulcerations since these are the most likely presentations of HPV-driven cancer. The examination must also include palpating the neck to check for enlarged lymph nodes since many HPV-driven oropharyngeal cancers will manifest initially as cervical metastasis before the primary lesion becomes symptomatic or clinically evident.

All healthcare providers must screen for HPV-driven oral lesions. The participation of these healthcare providers must include screening, diagnosis, patient education, access to quality information and continued education regarding HPV-related oral disease<sup>6</sup>. Oral healthcare providers benefit from being informed about their role in HPV disease prevention, screening, diagnosis and treatment<sup>7,8</sup>. It is therefore recommended that healthcare providers ensure the assessment of HPV infection risk to all patients who are potentially active and who exhibit high-risk behaviors or are in a high-risk population as defined above. If a patient is identified to have a potential HPV-driven oral or oropharyngeal lesion, the patient should be counseled regarding HPV and oral/oropharyngeal disease, and the lesion should be removed and submitted for pathologic analysis.

## *Squamous cell carcinoma of the right tonsil*

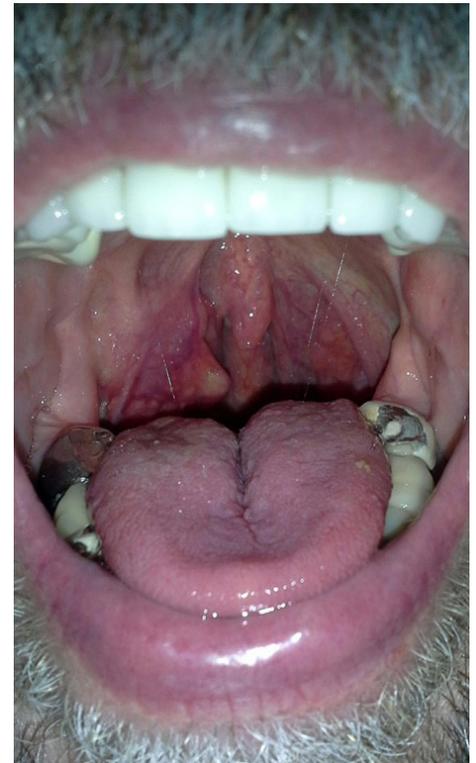


PHOTO CREDIT: DR. SEAN YOUNG

The value of immunization against HPV cannot be overemphasized. There is ample evidence that the use of vaccination strategies is a very successful public health strategy to decrease the incidence of HPV-induced oral, oropharyngeal, genital and skin lesions. All healthcare providers must emphasize the benefits of HPV immunization in accordance to the established guidelines<sup>9-11</sup>. The Centers for Disease Control and Prevention recommend that all children receive two doses, six months apart, of the immunization between the ages of 11-12. Alternate protocols are available for different age groups and special populations<sup>12</sup>.

# Oral Health Professionals Should Advise Against E-Cigarette Use, Especially by Young People and Pregnant Women

Anne Houston Staples, MA, MCHES • Director of Public Education & Communication, NCDHHS, Tobacco Prevention & Control Branch

Oral Health Professionals have long been partners with public health and health providers in promoting smoking cessation, as the impact of cigarette smoking on oral health is well established. With increased use and availability of novel nicotine products such as e-cigarettes, especially among young people, it is important for oral health providers to understand the facts about e-cigarettes and their potential health effects. The American Association for Dental Research includes electronic nicotine delivery systems in its statement on oral disease related to tobacco use and urges oral health care professionals to advise against e-cigarette use and to assist patients in cessation.

Randomized controlled trial of these products have, for the most part, not shown them to be useful smoking cessation aids. A recent meta-analysis showed e-cigarette users were 28 percent less likely to quit smoking, as e-cigarette use tends to become a situational substitute, leading to dual use instead of cessation<sup>1</sup>.

Nicotine exposure, whether through traditional or new and emerging products, is unsafe for young people and for pregnant women. Studies have shown that nearly all e-cigarettes sold contain nicotine. Nicotine is addictive and toxic enough to be deadly at high doses. Evidence has also shown nicotine can harm brain development during adolescence and young adulthood. E-cigarettes have been known to catch fire or explode, making them potentially very hazardous.

Traditional cigarettes and other tobacco products that are burned, such as cigars, cigarillos and hookah, are extremely dangerous to health because of the products of combustion, many of which lead to smokers' increased risk of heart disease, stroke, lung disease and many cancers. While e-cigarettes also deliver nicotine,

they lack combustion, which makes some people think they are harmless. This is not the case.

Research on the long-term health effects of e-cigarette use are ongoing. Some of the health effects discovered thus far include pneumonia, seizure, airway resistance, heart disease and reduced lung immunity. Some findings are specific to oral health. In a UCLA study 85 percent of cultured oral cavity cells died when exposed to 24 hours of e-cigarette aerosol. These aerosols, which contain nanoparticles of metal, silica and carbon in various concentrations depending on the flavor, brand and battery strength, also weaken the oral cavity's natural defense mechanism, increasing a users' risk for oral disease.

Because they operate with lithium batteries, e-cigarettes carry a risk of overheating and exploding. While instances are rare, they can be devastating to oral health, resulting in tooth loss and other damage to the mouth, as well as burns and damage to other parts of the body.

E-cigarettes, including all forms of vaping products, such as vape pens, hookah pens, Juuls and other e-cigarettes that resemble USB flash-drives, are the most commonly used tobacco products by North Carolina middle and high school students, with 16.9 percent of high school students and 5.3 percent of middle school students reporting as current users in 2017<sup>2</sup>. Given the popularity of these products, it is critical that health care providers, including oral health providers, help young people understand the potential risks of using any nicotine products.

Evidence indicates that exposure to nicotine during adolescence can have long-term effects on brain development and may increase the risk of addiction to other substances by causing changes within the brain. Nicotine during adolescence could

have negative implications for learning, memory, attention, behavioral problems, as well as future addiction. Nicotine stimulates reward pathways in the brain and can be as addictive as heroin or cocaine. Because their brains are developing, young people are especially vulnerable to nicotine addiction, and are responsive to nicotine at lower levels.

Nicotine affects the cardiovascular and central nervous systems, causing blood vessels to constrict, raising the pulse and blood pressure. Eating, drinking or absorbing nicotine through the skin can lead to nicotine poisoning; children are especially vulnerable. Symptoms of nicotine poisoning include nausea, vomiting, seizures and respiratory depression. Nicotine poisoning can be fatal.

There has been a significant rise in the number of calls to poison control numbers for exposures to liquids used in e-cigarettes. Calls from North Carolina, for example, increased from eight in 2011 to 121 in 2016. Many of these cases involved ingestion of e-cigarette liquids by toddlers and young children.

Pregnant women and women who intend to become pregnant should avoid e-cigarettes and minimize exposure to nicotine. Fetal exposure to nicotine can have a variety of negative long-term consequences, including sudden infant death syndrome (SIDS), impaired brain and lung development, auditory process problems, effects on behavior and obesity, increased risk of some birth defects, and deficits in attention and cognition. Studies also show that fetal nicotine exposure is associated with nicotine dependence in adolescence.

Finally, while the FDA has plans underway to regulate e-cigarettes, action has been delayed, so the products are currently unregulated. There is also no regulation on their advertising.

## RECOMMENDATIONS FOR HEALTH PROFESSIONALS: EDUCATE AND ADVISE

- Advise that nicotine exposure is unsafe for children, young people and pregnant women and not a proven effective method of tobacco cessation.
- When taking health histories, ask about e-cigarette use along with cigarette and other tobacco use.
- Let users know that
  - Nicotine in e-cigarettes is highly addictive.
  - Accidental exposure to e-liquids can result in nicotine poisoning, especially in children.
  - Nicotine harms the unborn.
  - Exposure to nicotine can harm the developing adolescent brain.
  - E-cigarettes have been known to explode, potentially causing injury.
- Advise all tobacco users to quit in clear, personalized terms. Offer or promote evidence-based cessation approaches - a combination of coaching and FDA-approved medication for those wishing to quit tobacco or e-cigarettes. For adult tobacco users that are not pregnant, this includes at least four counseling sessions and either varenicline or combination nicotine replacement therapy (nicotine patch + immediate release nicotine) for at least 12 weeks.
- People of all ages interested in quitting tobacco, including e-cigarettes, can receive free help from QuitlineNC.com at [www.quitline.com](http://www.quitline.com) or by calling 1-800-Quit-Now (1-800-784-8669).
- Consider becoming a referring practice to QuitlineNC. Learn more by calling (919) 707-5402.
- To learn more about how to integrate standard of care tobacco treatment for your oral health system, attend the [Duke-UNC Certified Tobacco Treatment Training](#).



## NC Oral Health Section to Offer Consulting Services to Health Department Dental Clinics

Kevin Buchholtz, DDS • Dentist Supervisor, Oral Health Section

Ensuring optimal oral health for all North Carolinians requires the contribution and collaboration of many partners. The NC Oral Health Section (OHS) has always maintained effective partnerships with county health department dental clinics, which are frequently the dental safety-net for vulnerable populations.

The OHS understands that operating financially sustainable public health dental clinics in North Carolina is challenging. The ability to recruit and retain a skilled dentist is often the determining factor in success.

Other challenges include relying primarily on Medicaid fees (which are often 50-100 percent less than usual and customary charges), competition among providers for Medicaid recipients, and cost settlement funds generated by a dental program not being used to offset dental program deficits.

To assist the clinics, the OHS is proud to initiate its first public health dental clinic consulting program. Primary focus will center around strategies to enable public health dental clinics to become financially self-sustaining by improving clinic operating efficiency, and

assistance with recruitment and retention, policy and procedures and Medicaid audits.

Initially, the OHS hopes to work with four health departments a year, two each over a six-month period.

If you would like to set up an introductory meeting please contact the OHS Section Chief, Dr. Sarah Tomlinson at [sarah.tomlinson@dhhs.nc.gov](mailto:sarah.tomlinson@dhhs.nc.gov) or Dr. Kevin Buchholtz at [Kevin.Buchholtz@dhhs.nc.gov](mailto:Kevin.Buchholtz@dhhs.nc.gov).

## The Need to Diversify the Oral Health Care Workforce

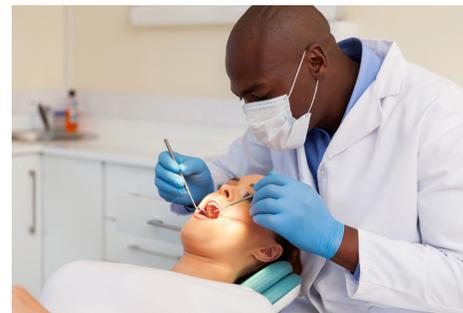
Wanda Wright, RN, DDS, MS, MSD • Assistant Professor, Division Director of Dental Public Health, ECU School of Dental Medicine

Blacks, Hispanic/Latinos and American Indian/Alaska Natives (AI/AN) are underrepresented within the dental workforce compared to the United States (US) population overall<sup>1</sup>. The Institute of Medicine has asserted that increasing the diversity of health professional students and faculty will prepare graduates to more effectively provide health care to a diverse population<sup>2</sup>. Evidence suggests that improving workforce diversity increases access to care and improves health outcomes in underserved populations<sup>3</sup>.

Minority populations in the US have documented disparities in oral health<sup>4</sup>. Non-Hispanic blacks, Hispanics, and AI/AN generally have the poorest oral health of any racial and ethnic group<sup>4</sup>. Nationwide initiatives have sought to increase the number of minority providers in the US But Black, Hispanic/Latinos and AI/AN dentists are still underrepresented in the dental workforce<sup>5</sup>.

At the same time, the US is rapidly becoming a more diverse nation. Current projections indicate that by 2044, more than half of all Americans will belong to a minority group<sup>9</sup>. Many of the groups that are going to experience the largest growth are also groups experiencing the greatest burden of oral disease. According to these projections, Non-Hispanic, white Americans will account for 43.6 percent of the population in 2060 compared to 62.2 percent of the population in 2014<sup>9</sup>. Black or African-Americans will account for 14.3 percent of the population in 2016 compared to 13.2 percent in 2014; a 42 percent population growth<sup>9</sup>. Hispanic Americans will experience a 114.8 percent population growth between 2014 and 2060; accounting for 28.6 percent of the population in 2060<sup>9</sup>.

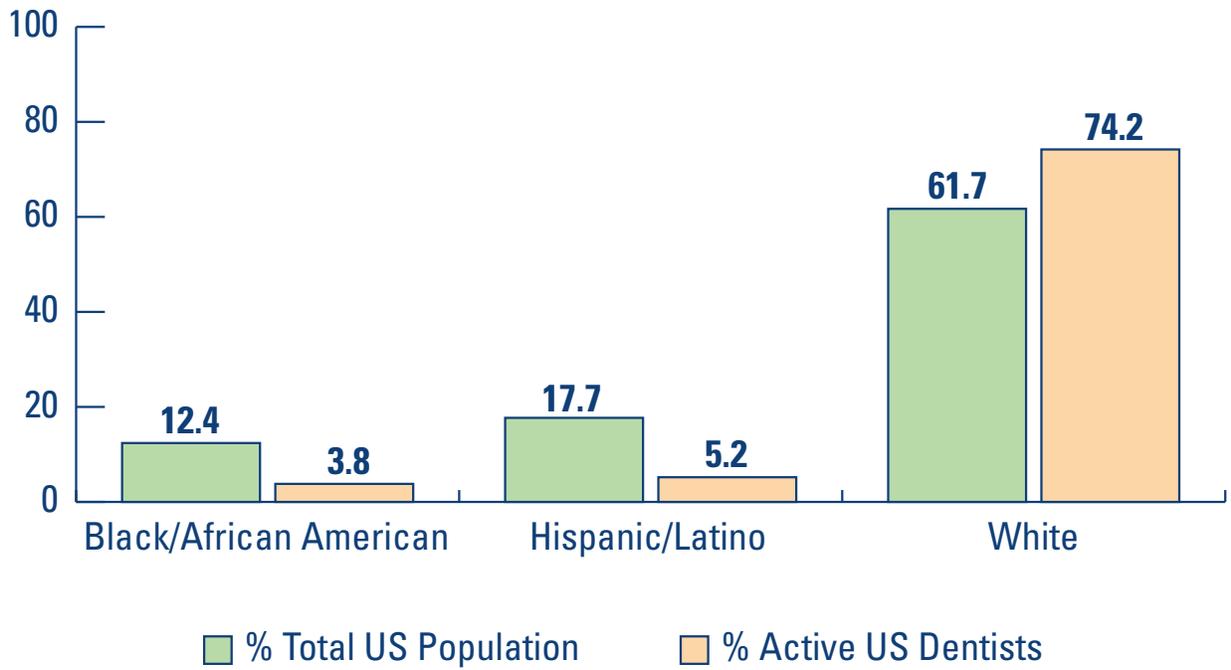
If some of these trends continue, given the projected change in demographics of the nation, racial and ethnic minorities will be



even more underrepresented in the dental workforce than they are today. Studies have shown that minority providers are more likely than white providers to treat larger numbers of minority patients and to provide care to the poor<sup>10,11</sup>.

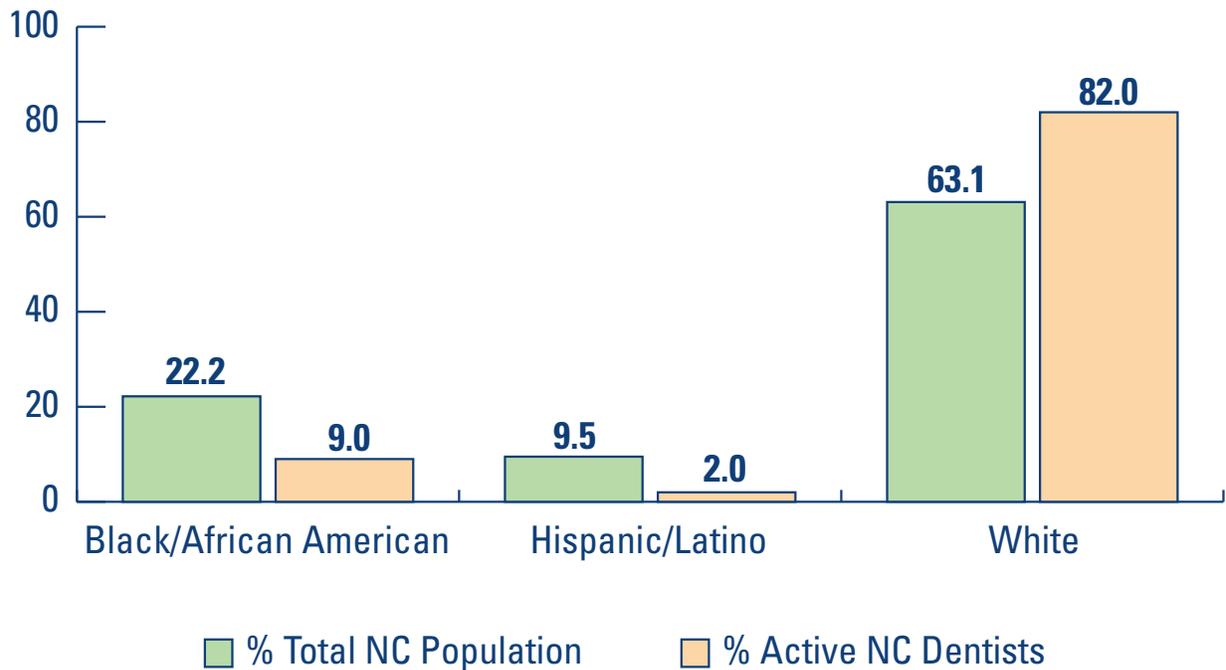
Workforce diversity can be only one of many strategies to address health disparities in minority oral health care. It is important that all dentists be aware of the needs of underserved communities and be willing to meet those needs.

### US Active Dental Workforce



NOTE. DATA FROM THE AMERICAN DENTAL ASSOCIATION, HEALTH POLICY INSTITUTE AND US CENSUS<sup>7</sup>

### NC Active Dental Workforce



NOTE. DATA FROM WEINTRAUB, BURGETTE, AND CHADWICK (2016) AND US CENSUS<sup>8</sup>

# Overcoming Oral Health Obstacles: Q and A with Village Family Dental

Sarah Tomlinson, DDS • State Dental Director, Oral Health Section Chief



Virginia Jones, Chief Operating Officer for Village Family Dental, was instrumental in the development of the state's first dental ambulatory care (surgical) centers. Below she addresses her commitment to improving oral health in North Carolina.

**Q: Village Family Dental has become a lead influencer in public health dentistry in North Carolina. Can you explain the origin of your commitment to improving oral health?**

A: Our practice started with Dr. Michael Knowles in 1985 in St. Pauls, North Carolina. The roots of our practice continue in his philosophy of care today. These critical principles include no child ever goes in pain, the three-year old never had a choice in their economic condition, and we treat every patient as we would our own family member, accepting them as they arrive.

These core principles directly align with those of public health dentistry in North Carolina. To be clear, it is not easy to be an underserved provider in North Carolina. We have rising employment and supply costs, yet our fees continue to decline, and our Medicaid reimbursement has not increased in over 15 years, and has, in fact, decreased multiple times in that same period. However, our partners believe in the call to serve others as noted in the core values above. Therefore, we work with our representatives in legislature, and continue to look for opportunities to help dentists increase the number of public health patients that they treat and reduce barriers to treatment.

**Q: One of the guiding values in public health is reducing disparities in healthcare. How will North Carolina's investment in care delivery through multiple dental surgical centers broaden access to dental care for underserved populations?**

A: The availability of the single specialty ambulatory surgery centers to North Carolina patients is a huge leap in solving a significant access to care issue. Through this process, we learned that the lack of access to quality operating room time was

not just a regional problem for us but was a state-wide problem. Pediatric dentists often have patient wait times of more than six to eight months for operating rooms. During this time, the patients often end up in the emergency room, where treatment of the underlying issue is unable to be achieved.

While the dentists are willing to treat the underserved population, due to their extensive treatment needs, an operating room (OR) was really the only option for a treatment location. However, operating rooms were not easily accessible to them. The dental surgery centers provide dentists the necessary OR block time to treat these patients in a safe environment under general anesthesia.

For example, because of the opening of the Fayetteville location in March, several of the practices using the facility are reporting a reduction in wait times by as much as two months. In addition, practices can see more of the underserved population than ever before, because the dentists are experiencing a place where they can treat them. Finally, the underserved populations have transportation issues, that the bureaucracies of the hospitals made difficult with multiple appointments. We have been able to streamline, reducing the number of appointments and transportation required.

**Q: Public health professionals want to advance healthcare solutions that support patients, families and their medical and dental providers. How is that ideal evident at Village Family Dental and do you see that translating to the dental surgical centers?**

A: At Village Family Dental, we seek to involve the patient's entire medical team in their care, versus simply looking in the

mouth and treating one specific issue. We meet with pediatricians and family health providers on a regular basis, spreading the message of early screenings for prevention, patient education, and advances in oral health that benefit a patient's physical health as well, such as sleep appliances. These ideals translate to the surgery center because we can provide a treatment facility where patients with significant medical issues may not have been able to have their dental treatment managed in the past due to lack of operating room time or facilities. Recently, we had a great example of this where a patient had significant damage to their oral health because of cancer treatments. Due to complications, treatment within a dental office was not an option. The surgery center provided dental care with medical doctor-supported anesthesia to help this patient get the dental treatment they needed, improving overall health by helping the patient to eat and swallow.

**Q: The team at Village Dental went beyond the established system for an alternative solution to an ever-present and complex problem. What have you learned about overcoming obstacles that you can share with our readers?**

A: I think the most important thing we learned is that there are wonderful people within our public health departments and the Department of Health and Human Services that genuinely want to help solve a real problem within dentistry and were willing to do whatever they could to help make this project a reality. We also learned patience and perseverance. Finally, we learned that there are many bridges left to build to connect the medical and dental community in working together for long-term systemic health of our mutual patients.

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